

## WHAT IS CLAIMED IS:

1. A hydroplaning detection apparatus for a vehicle comprising:
  - 5        wheel speed sensors for detecting vibrations from a road surface through tires, the wheel speed sensors being provided at front and rear wheel sides, respectively;
  - an input section through which the wheel speed sensors input their detection values; and
  - 10      a processing unit for processing the detection values to determine hydroplaning, wherein the processing unit operates:
    - to feature extract a change pattern of the detection values for the respective front and rear wheel sides by excluding inherent tire influences on the detection values;
    - 15      to execute pattern matching between the front and rear wheel sides on the basis of the feature extracted change patterns of the detection values;
    - to obtain a time difference from a coincidence of the change patterns;
    - 20      to calculate a first vehicle speed based on the time difference and a reference distance that is previously stored in the hydroplaning detection apparatus;
    - to calculate a second vehicle speed based on an average value of wheel speeds detected by the wheel speed sensor that is provided at the rear wheel side; and
    - 25      to determine that hydroplaning has occurred if a deviation

between the first vehicle speed and the second vehicle speed is greater than a certain value.

2. A hydroplaning detection apparatus according to claim  
5 1, wherein the processing unit determines that hydroplaning has occurred if the deviation exceeds the certain value for a certain period of time.

3. A hydroplaning detection apparatus according to claim  
10 1, wherein the reference distance is a wheel base of the vehicle

4. A hydroplaning detection apparatus according to claim  
2, wherein the reference distance is a wheel base of the vehicle.